MFC News

Caring for the Trees and Forests of Mississippi Since 1926

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June 2013

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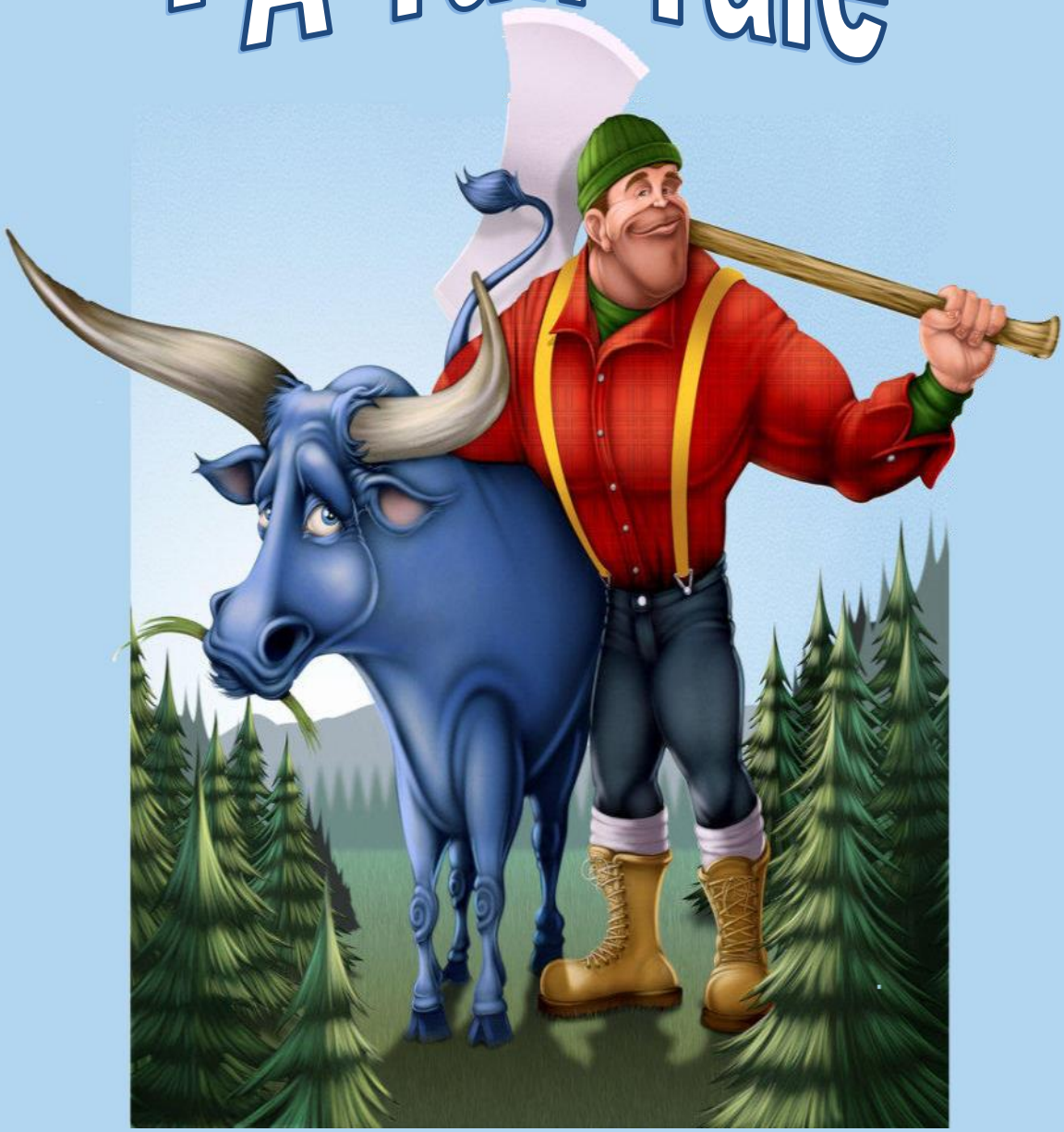

MFC News is published by the Mississippi Forestry Commission.

Mississippi Facts

- The oldest book in America, an ancient Biblical manuscript, is located at the University of Mississippi.
- World Color, a printer in Corinth, Mississippi prints National Geographic.
- After the Civil War, famed hat-maker John B. Stetson learned and practiced his trade at Dunn's Falls near Meridian.
- The University of Mississippi Blues Archive in Oxford contains the world's largest collection of Blues music.
- Nearly 60% of Mississippi is covered by forests, and more than 100 species of trees are found in the state.

Newsletter Deadlines

All submissions are welcome. Photographs are encouraged (although space limitations may curtail inclusion). Items must be received by the ***10th of the month*** to be included in the next month's issue. E-mail submissions *(in Microsoft Word)* and photos to

lharris@mfc.state.ms.us

or mail to:

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Paul Bunyan - A Tall Tale

Paul Bunyan is a lumberjack figure in North American folklore and tradition.

One of the most famous and popular North American folklore heroes, he is usually described as a giant as well as a lumberjack of unusual skill, and is often accompanied in stories by his animal companion, Babe the Blue Ox. He accomplished several feats, for instance the organization of logging in the US, the training of carpenter ants to help loggers, he scooped out the big lakes for his blue ox, Babe; and he cleared the lands of North and South Dakota to make it feasible for farming.

How The Myth Begin

The character originated in folktales circulated among lumberjacks in the Northeastern United States of America and eastern Canada, first appearing in print in a story published by Northern Michigan journalist James MacGillivray in 1906. The stories then found widespread popularity after being reworked by William Laughead for a logging company's advertising campaign beginning in 1914. The 1922 edition of Laughead's tales inspired many others, and the character thereafter became widely known across the United States and Canada. As Bunyan's popularity came only after the stories appeared in print, some commentators consider him an inauthentic "fakelore" character.

According to writer James Stevens in his 1925 book *Paul Bunyan*, French Canadians gave birth to the tales during the Papineau Rebellion of 1837, when they revolted against the young English Queen.

One legend says that at the mouth of the river in the Two Mountains area near Saint-Eustache, Quebec, loggers stormed into battle against the British. Among them was a fierce and bearded giant named Paul Bonjean, or "Bonyenne". (Another series of related legends are based on the feats of an actual man having lived in logging camps in the Ottawa Valley named Big Joe Mufferaw or Joseph Montferrand.) The legends about this defender of the people moved upriver from shanty ("chantier" in French) to shanty. His name was anglicized and the stories were modified and elaborated upon from storyteller to storyteller.

Much of the Paul Bunyan legend, and specifically the idea of Bunyan as a giant lumberjack with a giant blue ox sidekick, was created in the 20th century for an advertising campaign. Although it is claimed in some sources that "there is no documentary evidence of any Paul Bunyan story being told before James MacGillivray's story 'The Round River Drive,' published in 1910," MacGillivray had published some stories in the Oscoda, Michigan, *Press* on August 10, 1906, and Governor of Michigan Jennifer M. Granholm proclaimed the centennial of that date as "Paul Bunyan Day".

MacGillivray's story does not suggest that Paul Bunyan was a giant and contains no mention of a blue ox companion. But J.E. Rockwell had written about lumberjack tales of Paul Bunyan, and mentioned the (unnamed) blue ox in the February 1910 issue of the magazine *The Outer's Book*.

According to one tale noted by Rockwell, Bunyan was "eight feet tall and weighed 300 pounds."

(Continued on page 8)

2013 Hurricane Season

In its 2013 Atlantic hurricane season outlook, **NOAA's Climate Prediction Center** is forecasting an active or extremely active season this year.

For the six-month hurricane season, which begins June 1, NOAA's Atlantic Hurricane Season Outlook says there is a 70 percent likelihood of 13 to 20 named storms (winds of 39 mph or higher), of which 7 to 11 could become hurricanes (winds of 74 mph or higher), including 3 to 6 major hurricanes (Category 3, 4 or 5; winds of 111 mph or higher).

These ranges are well above the seasonal average of 12 named storms, 6 hurricanes and 3 major hurricanes.

"With the devastation of Sandy fresh in our minds, and another active season predicted, everyone at NOAA is committed to providing life-saving forecasts in the face of these storms and ensuring that Americans are prepared and ready ahead of time." said **Kathryn Sullivan, Ph.D.**, NOAA acting administrator. "As we saw first-hand with Sandy, it's important to remember that tropical storm and hurricane impacts are not limited to the coastline. Strong winds, torrential rain, flooding, and tornadoes often threaten inland areas far from where the storm first makes landfall."

Three climate factors that strongly control Atlantic hurricane activity are expected to come together to produce an active or extremely active 2013 hurricane season. These are:

- A continuation of the atmospheric climate pattern, which includes a strong west African monsoon, that is responsible for the ongoing era of high activity for Atlantic hurricanes that began in 1995;
- Warmer-than-average water temperatures in the tropical Atlantic Ocean and Caribbean Sea; and
- El Niño is not expected to develop and suppress hurricane formation.

"This year, oceanic and atmospheric conditions in the Atlantic basin are expected to produce more and stronger hurricanes," said Gerry Bell, Ph.D., lead seasonal hurricane forecaster with NOAA's Climate Prediction Center. "These conditions include weaker wind shear, warmer Atlantic waters and conducive winds patterns coming from Africa."

NOAA's seasonal hurricane outlook is not a hurricane landfall forecast; it does not predict how many storms will hit land or where a storm will strike. Forecasts for individual storms and their impacts will be provided throughout the season by NOAA's **National Hurricane Center**.

New for this hurricane season are improvements to forecast models, data gathering, and the National Hurricane Center communication procedure for post-tropical cyclones. In July, NOAA plans to bring online a new supercomputer that will run an upgraded Hurricane Weather Research and Forecasting (HWRF) model that provides significantly enhanced depiction of storm structure and improved storm intensity forecast guidance.

Also this year, Doppler radar data will be transmitted in real time from **NOAA's Hurricane Hunter aircraft**. This will help forecasters better analyze rapidly evolving storm conditions, and these data could further improve the HWRF mod-

June's Birthdays

Matthew Simpson - 1
Mary Bond - 2
Richard McInnis - 3
Douglas VanFleet - 4
George Byrd - 5
Joshua Netherland - 5
Gregory Bourque - 6
Steven Prescott - 7
Brad Pulliam - 7
Fred Floyd - 10
Edward McKie - 11
Jacob Hamilton - 13
Steven Vowell - 13
Aaron Rambin - 14
Vickie Anderson - 15
Michael Gray - 15
James Hancock- 15
Robert Scoggin - 15
Michael Woods - 16
William Gowen - 17
Gerald Green -18
Deborah Stewart -18
Gregory Chatham - 19
Brian Wharton - 19
Alma Arbuckle - 20
Roberta Willis - 20
Joshua Skidmore - 22
Scott Jackson - 23
Bryan Wheeler - 26
Bryan Davis - 29
Brad Odom - 29
Michael Sherman - 29

Personnel Personals

- Demetric Williams, Forest Ranger, Wilkinson County, Southwest District
- Cody Herring, Forester, Forest Health
- Jennifer L. LeBlanc, Forester Trainee, Panola County, Northwest District
- Mark A. Kelly, Forest Ranger, Kemper County, East Central District
- Stephen Ables, Forest Ranger, Attala County, East Central District
- Matthew White, Forest Ranger, Amite County, Southwest District

- Please keep Pat Montgomery in your thoughts and prayers as her brother passed way in early June.
- Please keep State Forester Morgan and his family in your thoughts and prayers as his mother-in-law passed way this month.

Tree Knowledge - Who Am I?

My leaves are simple, alternate, persistent and glandular. They range in size from 1.0" - 2.0" long and 0.5" to 0.75" wide. They are oblong to lance-shaped with a round or minutely notched apex and a wedge-shaped base. They are dark green above to whitish below. Their surface is shiny, leathery above, glabrous, glandular dotted below.

My twigs are slender, reddish brown or sometimes grayish bloom in color. Their surface is occasionally obscurely 3-angled; shield-shaped leaf scars with a single bundle scar.

My terminal bud os 0.5" long with smaller laterals. They are ovoid in shape and reddish brown in color.

My fruit is a drupe that is nutlike, winged; shiny with showy clusters. They are 0.25" in size and are elliptical shape.

My flower is monoecious, perfect; in erect terminal racemes; with 5-8 white to light pink petals.

My bark is dark reddish brown, thin, weakly fissured with small persistent, slightly elongated scales.

I form a small tree or shrub that reaches 30 to 40' at mature. There is not data on my growth rate or life span.

I am intolerant to shade and drought.

I am often found forming impenetrable thicket along the margins of swamps and pocisins and in rich river bottoms. In the Gulf states, I am found on exposed, sandy ridges.

I prefer a soil texture of medium to coarse with a strongly acidic soil pH of 4.5 - 5.5.

I range from the outer Gulf Coastal Plain from Georgia to northern Florida and to extreme southeast Louisiana. I am very common in the Florida Panhandle and southern Alabama. In Mississippi, I am found in seven southernmost counties.

I have no wildlife value or uses.

I have no commercial time value or uses because of my heavy, close-grained wood which is moderately hard, brittle and not strong. I have some value as fuel.

My foliage is beautiful and the fragrant flowers are a asset. I am a highly unusual but worth landscape plant especially in native situations. I am heat tolerant, resistant to disease and insects.

I am a favored honey plant to the Florida Panhandle beekeepers who often move their hives into my natural stands in March.

Who Am I?

Tree Knowledge - Who Am I? for May 2013 was the Hercules Club (*Zanthixylum clava-herculis* L.) Check out page 257 in the Mississippi Trees book.

Restore Longleaf Pine Trees To MS

By Clark Hicks of Hattiesburg, MS.

Thousands of years ago, long before European explorers "discovered" the lush forests of what is now the state of Mississippi, numerous native tribes roamed this region. The ancestors of these Native Americans are not entirely known, but by the 17th century, there were three large bands known as the Choctaw, Chickasaw and Natchez.

The natives who lived and cultivated the Piney Woods region of our state saw a landscape vastly different than what we experience today.

Virgin longleaf pines dominated this region. These trees, and their forebears, were the original species in this environment. The timber was massive, as captured in some early photographic evidence from logging companies, botanists and others. Several men could not wrap their linked arms around one tree trunk, and these verdant monsters grew hundreds of feet high.

Longleaf pine flourished for many reasons. The species was less susceptible to disease than other pine trees. Natural fires caused by lightning were a regular occurrence, and the longleaf pine thrived in fire while other vegetation turned to ash. Hurricanes and tornados destroyed most trees like toothpicks, but hardy longleaf pines routinely survived.

Longleaf pines, in these parts, were the kings of the ecosystem, and many of the plants and animals living beneath their canopies were dependent on the resources provided by these forests.

When immigrants began to settle in Mississippi, the longleaf pines provided significant income to prospectors, timber companies and other entrepreneurs. Many of the early families who settled in the Hattiesburg area became wealthy timber barons.

The native species, like all ecosystems, did not provide unlimited resources. Once the virgin timber had been cut, timber investors discovered longleaf pine had a slower growth rate compared to other non-native species such as loblolly and slash. Over a few generations, the longleaf pine became almost entirely supplanted by its faster growing cousins.

Today, there is a push by many timber interests to return longleaf to its Mississippi soil. The longleaf pine's natural ability to withstand extreme weather conditions and disease makes it an attractive alternative.

Recent hurricanes and pine beetles have wreaked havoc on landowners. Moreover, while a landowner may have to wait a few extra years for a longleaf to reach maturity, the tree can yield higher returns once harvested. Research shows the longleaf, unlike other pine species, is known for its straight and knot-free growth, which produces more highly priced poles, rather than less valued sawtimber.

The South Mississippi ecosystem is filled with thousands of species of animal and plant life which have co-existed with the longleaf pine for millions of years. Human beings do not own land in perpetuity. We are stewards of the natural environment God made for us.

If we have an opportunity to restore the longleaf pine to its rightful dominant place in the Piney Woods, let's plant some trees and watch them grow.

Hurricane Names For 2013

- Andrea
- Barry
- Chantal
- Dorian
- Erin
- Fernand
- Gabrielle
- Humberto
- Ingrid
- Jerry
- Karen
- Lorenzo
- Melissa
- Nestor
- Olga
- Pablo
- Rebekah
- Sebastien
- Tanya
- Van
- Wendy

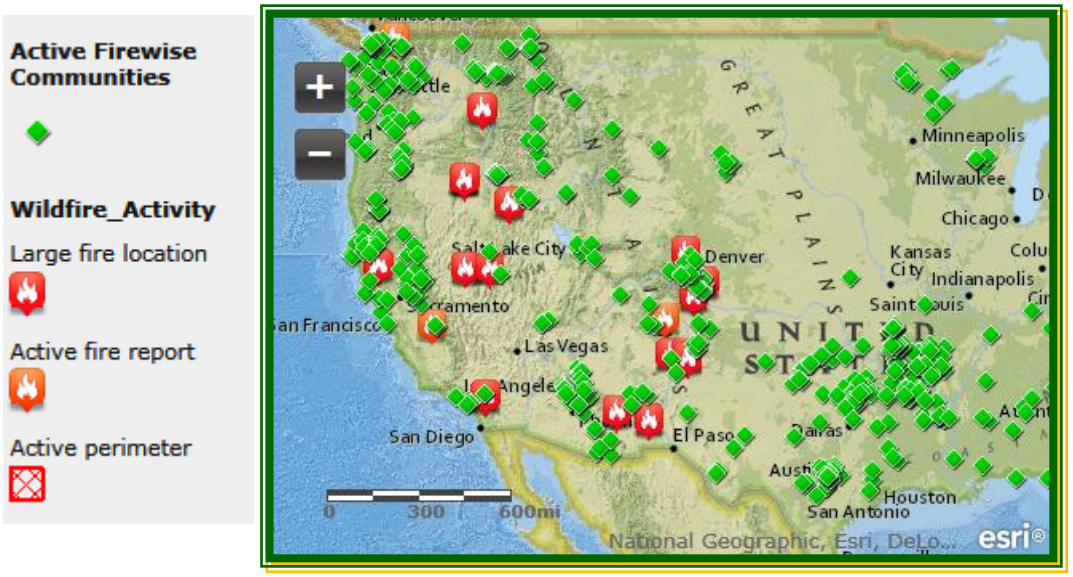
- June is named for the Roman goddess Juno.
- The flower for the month of June is the rose.
- The birthstone for June is the pearl.
- Gemini and Cancer are the astrological signs for June.
- Benjamin Franklin discovered electricity in June.
- The Pledge of Allegiance was recognized by Congress in June.

Mississippi Firewise

The Time To Prepare For A Wildfire Is Now!!!

Posted by Michele Steinberg, of NFPA.

Weather conditions all over Colorado resulted yesterday in a rash of fires in many areas of the state, at least four of them considered large fires, with the Black Forest Fire and Royal Gorge Fire destroying homes and damaging infrastructure in the past 24 hours.



In the case of Black Forest, a resort and retreat area known as La Forest was surrounded by fire forcing evacuation of owners and guests. My NFPA colleague Cathy Prudhomme and I were there on May 4 in support of a pilot Wildfire Preparedness Day of Service in Colorado. As I learned of the fire last evening, I wondered how many of the people I'd met and places I visited would be affected. I also reflected on the fact that so many people kept fire in mind and were willing to set aside a day or more of their time to voluntarily reduce the risk.

We set aside a special day on May 4 to help Coloradans focus on wildfire preparedness. But it's true that any day, any time, is the time to prepare for wildfire when you live with the risk of this natural phenomenon. The time is now if you are preparing your summer cabin for the season. The time is now if you are completing your spring cleaning and landscape maintenance. The time is now even if you are anxiously awaiting word on status of evacuation. There are things you can do now that can help to save your property, your valuables and your life. The time is now to take action to make your home, family and community safe.

NFPA's Firewise Communities Program tops 900th community mark

May 17, 2013 — The National Fire Protection Association's (NFPA) Firewise® Communities Program reached a milestone and announced the 900th community to earn recognition as a Firewise Communities/USA® site. The city of Lakeway in Travis County, Texas is the latest neighborhood to take action to improve residents' safety from threats posed by brush, grass and forest fires.

Initiated in 2002 with 12 pilot neighborhoods, the national Firewise Communities/USA® Recognition Program now boasts active member communities in 40 states, as well as a participation retention rate of 80 percent over the past decade. In addition to Lakeway, more than 160 new Firewise communities have been added in the past year nationwide

Fall Webworm

By Nathan A. Blount and Dr. John J. Riggins.

Introduction

The fall webworm (*Hyphantria cunea* (Drury)) is a common insect pest native to North America that can garner a lot of attention due its construction of unsightly webs (Fig. 1, page 16). Fall webworms are found throughout much of the United States and even in parts of southern Canada. At least 100 species of trees are known to be attacked by the fall webworm, but primary targets include ornamental, shade, fruit, and nut trees (McCullough and Siegert 1999). Fall webworms are also somewhat unique because they are one of a relatively few insect pests native to North American that have become a problematic invasive in another country. It was introduced to Europe around 1940, and it now feeds on more than 200 species of plants there. The fall webworm is also present in Asia where upwards of 300 plant species are susceptible to attack (McCullough and Siegert 1999).

Biology

Fall webworm caterpillars (larvae) most commonly range in color from light green to yellow, with head colors varying between black and red (Fig 2, page 16). Tufts of long black and white hairs are present on larvae and arise from small-wart like projections (tubercles) on the body. These projections are colored to match the head. Adults reach approximately 1-inch in length at maturity (McCullough and Siegert 1999).

Upon hatching, webworm larvae immediately begin to spin webs where they live in colonies. The web is constructed to act similar to a greenhouse, providing high humidity which increases larvae survivability and growth rates (Allen 1993). Larvae feed on leaves within the web, leaving the midrib and major leaf veins (Fig. 3, page 18). As webworms grow, their web also increases in size. When colonies of webworms are disturbed, they may make sudden synchronized jerking movements to ward away potential predators. Webworms will undergo up to 10 molts before they eventually leave the web to overwinter on the ground or within tree bark (McCullough and Siegert 1999).

Webworms overwinter as pupae which are brown, cylindrical, and about 5/8 of an inch long (Fig. 4, page 18). Pupae are enclosed in a thin, white felt-like cocoon and eventually hatch into moths the following spring. Moths are white in color, sometimes with dark markings on the wings (Fig 4, page 18). They are approximately 5/8 of an inch long with a wingspan of 1 – 1.5 inches and are commonly referred to as tiger moths (Klass 2012). The primary goal of the moth is to mate and lay eggs (Ree and Robinson 1999). These pale green eggs are laid in flat masses on the bottom of leaves and covered with hair from the abdomen of the female (Fig. 5, page 18). Eggs hatch in about a week and larvae immediately begin building their signature webs (Klass 2012).

There can be one to four generations of fall webworm, depending on the location and conditions. In northern states and Canada, only one generation may be produced each year (McCullough and Siegert 1999). The long growing season in southeastern states commonly harbors multiple generations. The first generation may arise as early as April, with generations persisting until the fall. The fall generation is the most threatening (Ree and Robinson 1999).

Signs and Symptoms

Fall webworms are most notable for the large webs they produce during late summer and fall (Fig. 1, page 16). These webs may span 4-6 feet, covering entire branches of trees. In cases of severe infestations, the entire tree may be covered in webs (Ree and Robinson 1999). Since consumed leaves have already provided the bulk of their photosynthetic functions to the tree by this time of year, fall webworms pose little direct threat to trees (Klass 2012). Repeated infestations over the span of years may degrade tree health and predispose it to potential fatal factors such as drought, disease, or other insect pests (Ree and Robinson 1999). However, these localized repeat infestations are rare. The main implication from fall webworms is aesthetic, the very unsightly appearance of

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Paul Bunyan - A Tall Tale

(Continued from page 2)

Historian Carleton C. Ames (whose son Aldrich Ames would later become a notorious spy) claimed in a 1940 article that Paul Bunyan was a 20th-century invention rather than a 19th-century lumber camp folk hero. William Laughead, an advertising copywriter who had once worked in lumber camps, took the stories of an old lumberjack and reworked them into the modern character. He sold his character to the Red River Lumber Company, which published "Introducing Mr. Paul Bunyan of Westwood, California" in 1916 as an advertising pamphlet. Among other things, Laughead gave the name "Babe" to the blue ox, originated the idea that Paul Bunyan and Babe were of enormous size, and created the first pictorial representation of Bunyan. Authors Richard Dorson and Marshall Fitwick cite Paul Bunyan as an example of "fakelore", or a modern story passed off as an older folktale.[

The Myth Begins

Bunyan's birth was somewhat unusual, as are the births of many mythic heroes, as it took five storks to carry the infant (ordinarily, one stork could carry several babies and drop them off at their parents' homes). When he was old enough to clap and laugh, the vibration broke every window in the house. When he was seven months old, he sawed the legs off his parents' bed in the middle of the night. Paul and his companion Babe the Blue Ox dug the Grand Canyon when he dragged his axe behind him. He created Mount Hood by piling rocks on top of his campfire to put it out.

Among other subjects, a myth about the formation of Great Lakes was centered around Babe: Paul Bunyan needed to create a watering hole large enough for Babe to drink from. There are also stories that Minnesota's 10,000 lakes were formed by Paul and Babe's footprints while they wandered blindly in a deep blizzard.

A Few Tall Tales

Paul Bunyan and the Grand Canyon

Paul Bunyan was the best lumberjack there ever was. He was as tall as a five-story building. Folks say he was so big; he used tree branches to brush his hair!
One day, Paul was walking along, carrying his huge ax. He got tired and started dragging the ax behind him. It cut a great big hole in the ground. When Paul turned around, he saw what he had done. He quickly put his ax back on his shoulder, but it was too late. He had dug out the Grand Canyon!

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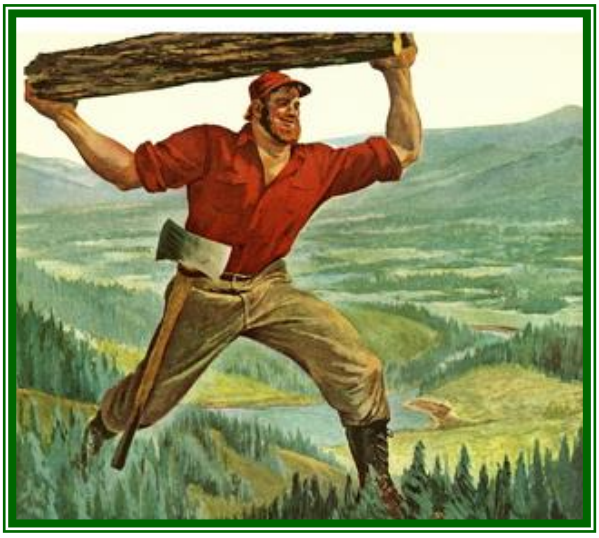
Paul Bunyan and the Log Jam

One spring day, the loggers on the Wisconsin River discovered a huge log jam, the biggest they'd ever seen. The logs were piled about two hundred feet high and the jam went upriver for a mile or more. Those loggers chopped and hauled at the jam, but it wouldn't budge an inch. So they called for Paul Bunyan to give them a hand.
Paul Bunyan and Babe the Blue Ox sized up the log jam. Then Paul told the loggers to stand back. He put Babe in the river in front of the log jam and began shooting his rifle, peppering the Blue Ox with shot. Babe thought he was being bothered by a particularly nasty breed of fly, so he began swishing his tail back and forth.
Well, that stirred things up a bit in the river. It got so agitated that the water began to flow upstream, taking the logs with it. Bit by bit, the log jam broke apart. Finally, Paul pulled Babe out of the water, and the river and logs began to float downstream again the way they should.



2013 Hurricane Season

(Continued from page 3)

el forecasts by 10 to 15 percent.

The National Weather Service has also made changes to allow for hurricane warnings to remain in effect, or to be newly issued, for storms like Sandy that have become post-tropical. This flexibility allows forecasters to provide a continuous flow of forecast and warning information for evolving or continuing threats.

"The start of hurricane season is a reminder that our families, businesses and communities need to be ready for the next big storm," said Joe Nimmich, FEMA associate administrator for Response and Recovery. "Preparedness today can make a big difference down the line, so update your family emergency plan and make sure your emergency kit is stocked. Learn more about how you can prepare for hurricane season at www.ready.gov/hurricanes."

Just The Facts!!!

- The 2013 Atlantic hurricane season runs from June 1st to November 30th.
- The National Weather Service defines a hurricane as "an intense tropical weather system with well-defined circulation and sustained winds of 74 mph (64 knots) or higher."
- Hurricanes are rated according to intensity on the Saffir-Simpson Hurricane Scale.
- The 1-5 scale estimates potential property damage.
- A Category 3 or higher is considered a major hurricane.
- The National Hurricane Center advises Preparedness:
- A hurricane watch indicates the possibility that a region could experience hurricane conditions within 48 hours.
- A hurricane warning indicates that tropical-storm-force winds of at least 74 mph are expected within 36 hours.

Retired Atlantic Hurricanes Names

Within the North Atlantic ocean, the name of any significant tropical cyclone can be retired from the tropical cyclone naming lists by the World Meteorological Organization's Hurricane Committee, if it is felt that a storm is so deadly or damaging that the future use of its name would be inappropriate. The practice of retiring significant names was started in 1955 by the United States Weather Bureau, after hurricanes Carol, Edna and Hazel struck the Northeastern United States and caused a significant amount of damage in the previous year. Initially the names were retired for ten years after which time they might be reintroduced; however, in 1969 this policy was changed to retire the names indefinitely. In 1977, the United States National Oceanic and Atmospheric Administration passed control of the naming lists to the Hurricane Committee, who decided that they would retire names at their annual session when required.

The deadliest storm to have its name retired was Hurricane Mitch, which caused over 10,000 fatalities when it struck Central America during October 1998, while the costliest hurricane was Katrina which caused over $108 billion in damage in August 2005. Since the formal start of naming during the 1947 Atlantic hurricane season, an average of one storm name has been retired each season, though many seasons (most recently 2009) have had no storm names retired. The most recent tropical cyclone to have its name retired was Hurricane Sandy, which caused extensive damage in the Caribbean, Eastern United States, and Canada.

Retired Names By Years

The 1950's

Between 1954 and 1959, either eight or nine names were deemed significant enough to be retired for ten years due to their impact, before being permanently retired in 1969.There were no names retired after the 1956 or 1958 seasons, while it is unknown if the 1959 season had a retiree. Collectively, these storms resulted in at least 2112 fatalities and over US$2.05 billion in damage. The deadliest hurricane was Hurricane Hazel, which killed at least 701 people, while the costliest was Hurricane Diane, which caused US$856 million in damage.

The 1960's

In 1960, four rotating lists of names were developed to avoid having to create new lists each year, while the practice of retiring any particularly damaging storm names for 10 years continued, with 11 names deemed significant enough to be retired during the decade. At the 1969 Interdepartmental Hurricane Conference, it was requested that the names Carol, Edna, and Hazel be permanently retired due to their importance to the research community.[1] This request was subsequently accepted and led to today's practice of retiring names of significant tropical cyclones permanently. Collectively, the 11 systems were responsible for over 9000 fatalities and in excess of 7US$4.41 billion in damage. There were no retired names in 1962 or 1968.

The 1980's

After control of the naming scheme was turned over to the World Meteorological Organization's Hurricane Committee during the mid-1970s, the 1980s marked the least prolific decade in terms of the number of retired storms with 7 names warranting removal. Between them the 7 systems caused over $20.9 billion in damage while over 893 people lost their lives. Hurricane Gilbert was the most intense tropical cyclone during the decade with a pressure of 888 hPa (26.22 inHg), which also made it the most intense tropical cyclone on record until Hurricane Wilma surpassed it during 2005. No names were retired by the Hurricane Committee after the 1981, 1982, 1984, 1986 and 1987, which was the most of any decade

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since the introduction of the practice of retiring hurricane names.

The 1990's

During the 1990s, the Atlantic Ocean moved into its active era, which lead to more tropical cyclones forming during the hurricane seasons. This decade featured the deadliest tropical cyclone to have its name retired after Hurricane Mitch killed nearly 20,000 people in Central America. A total of 15 names were retired in this decade, with seven of those in two consecutive years (1995 and 1996). 1993, 1994 and 1997 had no retired names

The 2000's

After the Atlantic basin had moved into the warm phase of the Atlantic multidecadal oscillation during the mid-1990s, the 2000s marked the most prolific decade in terms of the number of retired storms, with 24 names warranting removal. The decade featured one of the costliest tropical cyclones on record, Hurricane Katrina, which inflicted roughly 7US$108 billion in damage across the Gulf Coast of the United States. Katrina was also the deadliest hurricane to strike the United States since the 1928 Okeechobee hurricane. After causing approximately US$9 billion in damage, Tropical Storm Allison became the first tropical storm in this basin to have its name retired, while subtropical storms started to be named during 2002. Hurricane Jeanne was the deadliest storm during the decade and was responsible for over 3000 deaths when it impacted Haiti and other parts of the Caribbean. During October 2005, Hurricane Wilma became the most intense tropical cyclone in the Atlantic basin on record, with a central pressure of 882 hPa (26.05 inHg). There were no retired names after the 2006 and 2009 hurricane seasons.[8] Collectively, the 24 systems were responsible for over 7500 fatalities and in excess of US$280 billion in damage.

The 2010's

So far during the current decade, four tropical cyclone names have been retired. Collectively, these systems have killed at least 383 people and caused at least $92.1 billion worth of damage. Hurricane Igor is currently the strongest storm to have its name retired, while Hurricane Sandy is currently the costliest and deadliest storm of the 2010s (and second costliest of all time).

1950's

Name	Dates	SSHS Category	Wind speeds	Pressure	Areas affected	Deaths	Damages
Janet	September 21 – 30, 1955	Category 5 hurricane	175 mph (280 km/h)	914 hPa (26.99 inHg)	Lesser Antilles, Central America	676	$47.8 million
Ione	September 10 – 24, 1955	Category 3 hurricane	120 mph (195 km/h)	938 hPa (27.70 inHg)	North Carolina	7	$88 million
Hazel	October 5 – 18, 1954	Category 4 hurricane	150 mph (240 km/h)	937 hPa (27.67 inHg)	The Caribbean, Eastern United States, Ontario	701	$381 million
Gracie	September 20 – October 2, 1959	Category 4 hurricane	140 mph (220 km/h)	950 hPa (28.06 inHg)	The Carolinas, Virginia	22	$14 million
Edna	September 2 – 15, 1954	Category 3 hurricane	120 mph (190 km/h)	954 hPa (28.17 inHg)	New England, Atlantic Canada	21	$42 million
Diane	August 7 – 21, 1955	Category 3 hurricane	120 mph (195 km/h)	969 hPa (28.62 inHg)	Mid-Atlantic states, New England	184	$831 million
Connie	August 3 – 15, 1955	Category 4 hurricane	145 mph (230 km/h)	936 hPa (27.64 inHg)	Mid-Atlantic states, New England	25	$40 million
Carol	August 25 – September 1, 1954	Category 3 hurricane	115 mph (185 km/h)	957 hPa (28.26 inHg)	Northeastern United States	60	$461 million
Audrey	June 25 – 29, 1957	Category 4 hurricane	145 mph (230 km/h)	946 hPa (27.94 inHg)	Southern United States	416	$150 million
9 names	**References:**[nb 3][nb 4]					**2112**	**$2.05 billion**

1960's

Name	Dates	SSHS Category	Wind speeds	Pressure	Areas affected	Deaths	Damages
Donna	August 29 – September 14, 1960	Category 5 hurricane	160 mph (260 km/h)	930 hPa (27.46 inHg)	The Caribbean, Eastern United States	164	$400 million
Carla	September 3 – 16, 1961	Category 5 hurricane	175 mph (280 km/h)	931 hPa (27.49 inHg)	Texas, Louisiana, Midwestern United States	46	$408 million
Hattie	October 27 – November 1, 1961	Category 5 hurricane	160 mph (260 km/h)	920 hPa (27.17 inHg)	Central America	319	$60.3 million
Flora	September 26 – October 12, 1963	Category 4 hurricane	145 mph (230 km/h)	940 hPa (27.76 inHg)	The Caribbean, Florida	7,193	$529 million
Cleo	August 20 – September 5, 1964	Category 4 hurricane	155 mph (250 km/h)	950 hPa (28.06 inHg)	The Caribbean, Southeastern United States	217	$198 million
Dora	August 28 – September 14, 1964	Category 4 hurricane	140 mph (220 km/h)	942 hPa (27.82 inHg)	Southeastern United States	5	$250 million
Hilda	September 28 – October 4, 1964	Category 4 hurricane	150 mph (240 km/h)	941 hPa (27.79 inHg)	Southern United States	38	$125 million
Betsy	August 27 – September 14, 1965	Category 4 hurricane	155 mph (250 km/h)	941 hPa (27.79 inHg)	Bahamas, Southeastern United States	75	$1.42 billion
Inez	September 21 – October 11, 1966	Category 4 hurricane	150 mph (240 km/h)	929 hPa (27.43 inHg)	The Caribbean, Florida, Mexico	710	$616 million
Beulah	September 5 – 22, 1967	Category 5 hurricane	160 mph (260 km/h)	921 hPa (27.20 inHg)	The Caribbean, Mexico, Texas	59	$208 million
Camille	August 14 – 22, 1969	Category 5 hurricane	190 mph (305 km/h)	905 hPa (26.72 inHg)	Cuba, United States Gulf Coast	256	$1.42 billion
11 names	**References:**[nb 3][nb 4]					**9082**	**$4.41 billion**

1970's

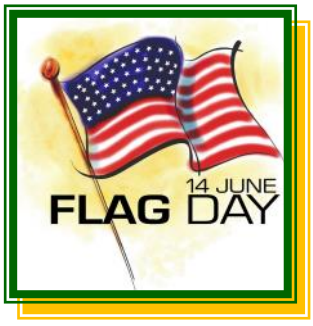
Name	Dates	SSHS Category	Wind speeds	Pressure	Areas affected	Deaths	Damages
Celia	July 31 – August 5, 1970	Category 3 hurricane	125 mph (205 km/h)	945 hPa (27.91 inHg)	Cuba, United States Gulf Coast	20	$930 million
Agnes	June 14 – 25, 1972	Category 1 hurricane	85 mph (140 km/h)	977 hPa (28.85 inHg)	Mexico, Cuba, Eastern United States	124	$2.1 billion
Carmen	August 29 – September 10, 1974	Category 4 hurricane	150 mph (240 km/h)	928 hPa (27.40 inHg)	Central America, Mexico, United States Gulf Coast	8	$162 million
Fifi	September 14 – 24, 1974	Category 2 hurricane	110 mph (180 km/h)	971 hPa (28.67 inHg)	Jamaica, Central America, Mexico	>8,000	$1.8 billion
Eloise	September 13 – 24, 1975	Category 3 hurricane	125 mph (205 km/h)	955 hPa (28.20 inHg)	The Caribbean, Yucatán Peninsula, Florida	80	$550 million
Anita	August 29 – September 4, 1977	Category 5 hurricane	175 mph (280 km/h)	926 hPa (27.34 inHg	Mexico	10	Extensive
Greta	September 13–23, 1978	Category 4 hurricane	130 mph (215 km/h)	947 hPa (27.96 inHg	The Caribbean, Central America, Mexico	5	26 million
David	August 25 – September 8, 1979	Category 5 hurricane	175 mph (280 km/h)	924 hPa (27.29 inHg)	The Caribbean, United States East coast	2,068	$1.54 billion
Frederic	August 29 – September 15, 1979	Category 4 hurricane	135 mph (215 km/h)	943 hPa (27.85 inHg)	The Caribbean, Southeastern United States	12	$2.3 billion
9 names	**References:**[nb 3][nb 4]					**10,527**	**$9.41 billion**

1980's

Name	Dates	SSHS Category	Wind speeds	Pressure	Areas affected	Deaths	Damages
Allen	July 31 – August 11, 1980	Category 5 hurricane	190 mph (305 km/h)	899 hPa (26.55 inHg)	The Caribbean, Yucatán Peninsula, Mexico, South Texas	269	$1.24 billion
Alicia	August 15 – 21, 1983	Category 3 hurricane	115 mph (185 km/h)	963 hPa (28.44 inHg)	Eastern Texas, Louisiana	21	$2 billion
Elena	August 28 – September 4, 1985	Category 3 hurricane	125 mph (205 km/h)	953 hPa (28.14 inHg)	Cuba, United States Gulf Coast	4	$1.25 billion
Gloria	September 16 – October 2, 1985	Category 4 hurricane	145 mph (230 km/h)	919 hPa (27.14 inHg)	United States East Coast, Atlantic Canada	9	$900 million
Gilbert	September 8 – 19, 1988	Category 5 hurricane	185 mph (295 km/h)	888 hPa (26.22 inHg)	Venezuela, Central America, Hispaniola, Mexico	318	$5 billion
Joan	October 11 – November 2, 1988	Category 4 hurricane	145 mph (230 km/h)	932 hPa (27.52 inHg)	Lesser Antilles, Colombia, Venezuela, Central America	216	$2 billion
Hugo	September 9 – 25, 1989	Category 5 hurricane	160 mph (260 km/h)	918 hPa (27.11 inHg)	The Caribbean, United States East Coast	56	$8.5 billion
7 Names			**References:**[nb 3][nb 4]			**893**	**$20.9 billion**

Hurricane Katrina Facts

- The death toll, post Katrina, stood at 1,836, which included the total number of direct and indirect deaths. This number includes 1,577 from Louisiana and 238 from Mississippi. The total number of people missing was estimated to be around 705. An estimated 11 people were killed when Hurricane Katrina made its first landfall in Florida.
- Hurricane Katrina was the third-strongest hurricane to make landfall in America. Hurricane Camille (1969) and Hurricane Allen (1980) were the strongest hurricanes to rock the US, with gusts topping around 190 mph, as compared to 160 mph by Hurricane Katrina. It was also the sixth-strongest hurricane ever recorded at the time.
- The effect of the deadly hurricane was far-reaching, with around 90,000 square miles affected.
- The debris left behind by the destruction, if stacked together on a football field, would reach the height of ten and a half miles.
- The repair and reconstruction costs, as estimated by the Bush Administration, was a whopping $105 billion.
- An estimated 300,000 homes were destroyed by this super storm.
- At around six meters high, the storm surge of Katrina shook the coastline.



Celebrating 75 Years
MFA
1938-2013

MFA Annual Meeting Committee, chaired by Jamie Houston of Jackson, is planning an outstanding meeting in celebration of MFA's 75th Anniversary. Speakers committed to date include Fred Stimpson, Scotch-Gulf Lumber; E.J. "Buddy" Irby, Anderson Tully Worldwide; Rob Olszewski, Plum Creek; David Jones, Mississippi State University; and Danielle DiMartino Booth, Federal Reserve Bank of Dallas.

In addition to sessions, activities include golf, sporting clays, and a tour of Forestry Suppliers and the King Edward Hotel. Please block out October 16 - 18, 2013 on your calendar and plan to be in Jackson for the 75th Anniversary of MFA.

1990's

Name	Dates	SSHS Category	Wind speeds	Pressure	Areas affected	Deaths	Damages
Diana	August 4 – 9, 1990	Category 2 hurricane	100 mph (165 km/h)	980 hPa (28.94 inHg)	Yucatán Peninsula, central Mexico	96	Extensive
Klaus	October 3 – 9, 1990	Category 1 hurricane	80 mph (130 km/h)	985 hPa (29.09 inHg)	Lesser Antilles, The Bahamas, Southeast United States	11	$1 million
Bob	August 16 – 20, 1991	Category 3 hurricane	115 mph (185 km/h)	950 hPa (28.06 inHg)	United States East Coast, Canada	17	$1.5 billion
Andrew	August 16 – 28, 1992	Category 5 hurricane	175 mph (280 km/h)	922 hPa (27.23 inHg)	The Bahamas, Florida, United States Gulf Coast	65	$26.5 billion
Luis	August 27 – September 11, 1995	Category 4 hurricane	140 mph (220 km/h)	935 hPa (27.61 inHg)	Leeward Islands, Puerto Rico, Bermuda	19	$2.5 billion
Marilyn	September 12 – 22, 1995	Category 3 hurricane	115 mph (185 km/h)	949 hPa (28.02 inHg)	The Caribbean, Bermuda	8	$1.5 billion
Opal	September 27 – October 6, 1995	Category 4 hurricane	150 mph (240 km/h)	916 hPa (27.05 inHg)	Guatemala, Yucatán Peninsula, Eastern United States	59	$514 million
Roxanne	October 7 – 21, 1995	Category 3 hurricane	115 mph (185 km/h)	956 hPa (28.23 inHg)	Mexico	14	$1.5 billion
Cesar	July 24 – 29, 1996	Category 1 hurricane	85 mph (140 km/h)	985 hPa (29.09 inHg)	Central America, Mexico	112	$203 million
Fran	August 23 – September 8, 1996	Category 3 hurricane	120 mph (195 km/h)	946 hPa (27.94 inHg)	Eastern United States, Toronto	26	$4.16 billion
Hortense	September 3 – 16, 1996	Category 4 hurricane	140 mph (220 km/h)	935 hPa (27.61 inHg)	The Caribbean, Atlantic Canada	39	$158 million
Georges	September 15 – October 1, 1998	Category 4 hurricane	155 mph (250 km/h)	937 hPa (27.67 inHg)	The Caribbean, United States Gulf Coast	604	$9.72 billion
Mitch	October 22 – November 5, 1998	Category 5 hurricane	180 mph (285 km/h)	905 hPa (26.72 inHg)	Central America, Yucatán Peninsula, South Florida	11,000	$6.2 billion
Floyd	September 7 – 19, 1999	Category 4 hurricane	155 mph (250 km/h)	921 hPa (27.20 inHg)	The Bahamas, Eastern United States, Atlantic Canada	56	$6.9 billion
Lenny	November 13 – 23, 1999	Category 4 hurricane	155 mph (250 km/h)	933 hPa (27.55 inHg)	Colombia, Puerto Rico, Leeward Islands	17	$686 million
15 Names	**References:**[nb 3][nb 4]					**12,144**	**$62 billion**

Forest pests and pathogens are devastating our forests. Here are some key facts about America's invasive's problem:

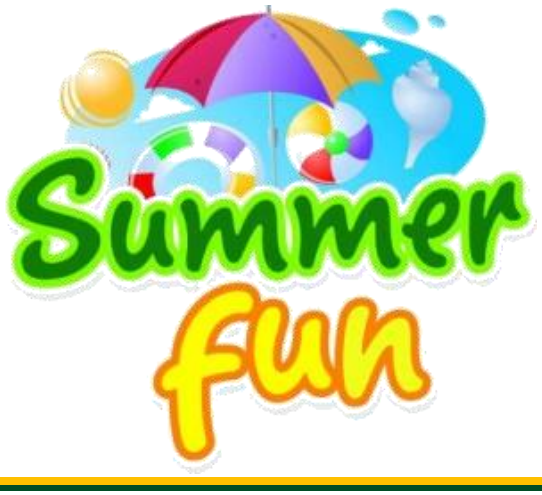
- More than 58 million acres of forestland is at risk of forest pests
- Every 2-3 years another, damaging invasive pest is introduced into the U.S.
- Our nation's 10 million family forest owners provide invaluable public benefits—all of which are at risk from the impending threat of forests pests and pathogens.
- Approximately 40 invasive and destructive plants threaten the health and vitality of our sustainable forest resources.

2000's

Name	Dates	SSHS Category	Wind speeds	Pressure	Areas affected	Deaths	Damages	References
Keith	September 28 – October 6, 2000	Category 4 hurricane	140 mph (220 km/h)	939 hPa (27.73 inHg)	Central America	56	$319 million	[38][76][77][78]
Allison	June 4 – 18, 2001	Tropical Storm	60 mph (95 km/h)	1000 hPa (29.53 inHg)	Texas, Louisiana, Southern United States	50	$9 billion	[27][79]
Iris	October 4 – 9, 2001	Category 4 hurricane	145 mph (230 km/h)	948 hPa (27.99 inHg)	Hispaniola, Jamaica, Belize, Guatemala, Mexico	31	$140 million	[79][80]
Michelle	October 29 - November 6, 2001	Category 4 hurricane	140 mph (220 km/h)	933 hPa (27.55 inHg)	Central America, Jamaica, Cuba, Bahamas	17	$2 billion	[61][79]
Isidore	September 14 - 27, 2002	Category 3 hurricane	125 mph (205 km/h)	934 hPa (27.58 inHg)	Cuba, Yucatán Peninsula, Louisiana	17	$1.3 billion	[81][82]
Lili	September 21 - October 4, 2002	Category 4 hurricane	145 mph (230 km/h)	938 hPa (27.70 inHg)	Windward Islands, Cuba, Jamaica, Haiti, Louisiana	15	$925 million	[27][81]
Fabian	August 25 – September 8, 2002	Category 4 hurricane	145 mph (230 km/h)	939 hPa (27.73 inHg)	Bermuda	8	$300 million	[83]
Isabel	September 6 - 20, 2003	Category 5 hurricane	165 mph (270 km/h)	915 hPa (27.02 inHg)	Greater Antilles, Bahamas, Eastern United States, Ontario	50	$5.37 billion	[27][83]
Juan	September 24 – 29	Category 2 hurricane	105 mph (170 km/h)	969 hPa (28.61 inHg)	Atlantic Canada	5	$200 million	[83][84]
Charley	August 9 - 15, 2004	Category 4 hurricane	150 mph (240 km/h)	941 hPa (27.79 inHg)	Jamaica, Cayman Islands, Cuba, Florida, The Carolinas	40	$15.1 billion	[85]
Frances	August 24 – September 10, 2004	Category 4 hurricane	145 mph (230 km/h)	935 hPa (27.61 inHg)	The Caribbean, Eastern United States, Ontario	49	$9.85 billion	[27][86][87][88]
Ivan	September 2 – 24, 2004	Category 5 hurricane	165 mph (270 km/h)	910 hPa (26.87 inHg)	The Caribbean, Venezuela, United States Gulf Coast	124	$23.3 billion	[27][87][89]
Jeanne	September 13 – 28, 2004	Category 3 hurricane	120 mph (195 km/h)	950 hPa (28.05 inHg)	The Caribbean, Eastern United States	3,035	$7.66 billion	[27][38][75][87]
Dennis	July 4 – 13, 2005	Category 4 hurricane	150 mph (240 km/h)	930 hPa (27.46 inHg)	Greater Antilles, Southeastern United States	99	$4 billion	[27][40][90]
Katrina	August 23 – 30, 2005	Category 5 hurricane	175 mph (280 km/h)	902 hPa (26.64 inHg)	Bahamas, United States Gulf Coast	1,836	$108 billion	[91]

RESEARCH

A new U.S. study finds that drinking one or more servings of fruit juice or sugar-sweetened soda daily results in a 23 percent higher risk for kidney stones compared to drinking just one serving a week.



2000's

Rita	September 18 – 26, 2005	Category 5 hurricane	180 mph (290 km/h)	895 hPa (26.43 inHg)	Cuba, United States Gulf Coast	62	$12 billion
Stan	October 1 – 5, 2005	Category 1 hurricane	80 mph (130 km/h)	977 hPa (28.85 inHg)	Mexico, Central America	1,668	$3.96 billion
Wilma	October 15 – 26, 2005	Category 5 hurricane	185 mph (295 km/h)	882 hPa (26.05 inHg)	Greater Antilles, Central America, Florida	23	$29.3 billion
Dean	August 13 – 23, 2007	Category 5 hurricane	175 mph (280 km/h)	905 hPa (26.72 inHg)	The Caribbean, Central America	45	$1.78 billion
Felix	August 31 – September 5, 2007	Category 5 hurricane	175 mph (280 km/h)	929 hPa (27.43 inHg)	Nicaragua, Honduras	130	$720 million
Noel	October 28 – November 2, 2007	Category 1 hurricane	80 mph (130 km/h)	980 hPa (28.94 inHg)	Greater Antilles, Eastern United States, Atlantic Canada	163	$580 million
Gustav	August 25 – September 4, 2008	Category 4 hurricane	155 mph (250 km/h)	941 hPa (27.79 inHg)	Greater Antilles, Cayman Islands, United States Gulf Coast	153	$6.61 billion
Ike	September 1 – 14, 2008	Category 4 hurricane	145 mph (230 km/h)	935 hPa (27.61 inHg)	Greater Antilles, Texas, Louisiana, Midwestern United States	195	$37.5 billion
Paloma	November 5 – 10, 2008	Category 4 hurricane	145 mph (230 km/h)	944 hPa (27.88 inHg)	Cayman Islands, Cuba	None	$300 million
24 names	**References:**[nb 3][nb 4]					**7,873**	**$280 billion**

2010's

Name	Dates	SSHS Category	Wind speeds	Pressure	Areas affected	Deaths	Damages
Igor	September 8 – 21, 2010	Category 4 hurricane	155 mph (250 km/h)	924 hPa (27.29 inHg)	Bermuda, Newfoundland	3	$200 million
Tomas	October 29 – November 7, 2010	Category 2 hurricane	100 mph (155 km/h)	982 hPa (29.00 inHg)	The Caribbean	44	$348 million
Irene	August 21 – 28, 2011	Category 3 hurricane	120 mph (195 km/h)	942 hPa (27.82 inHg)	The Caribbean, United States East Coast, Eastern Canada	56	$16.6 billion
Sandy	October 22 – 29, 2012	Category 3 hurricane	115 mph (185 km/h)	940 hPa (27.76 inHg)	The Caribbean, United States East Coast, Eastern Canada	285	$53 billion
4 Names	**References:**[nb 3][nb 4]					**388**	**$92.1 billion**

Figure 1: Web of the fall webworm (Hyphantria cunea (Drury)), with dead leaves visible. Photograph by: Ronald F. Billings, Texas

FALL WEBWORM

Figure 2: Fall webworm caterpillar (larvae). Photograph by: James B. Hanson, USDA Forest Service, www.forestryimages.org.

Fall Webworm

(Continued from page 7)
webs containing cast skins, fecal pellets, and dead leaves (McCullough and Siegert 1999). Webs are sometimes mistaken as eastern tent caterpillar webs, but eastern tent caterpillars construct their webs during the early spring around the time of leaf budding in the crotches of branches (Allen 1993).

Susceptibility

Fall webworms are known to attack more than 200 species of plants, including over 100 species of trees. They most commonly attack ornamental, nut, and fruit trees, while avoiding conifers such as pine and cedar (Allen 1993). Common species infested by fall webworms in the southeastern U.S. include pecan, hickory, elm, and oak (Ree and Robinson 1999). Webworms prefer trees that receive lots of sunlight, thus are more prevalent among trees in or near open areas such as fields, yards and road sides (Klass 2012).

Control

In most cases, fall webworm is just an unsightly annoyance, and control measures are usually unnecessary. However, in certain extreme instances, infestations can be severe enough to warrant intervention. Most trees have some level resistance to defoliation, but the degree to which they are resistant varies by species. Most otherwise healthy and vigorously growing hardwood trees will not die from a single total defoliation. In severe infestations where trees are completely defoliated each year (consecutively) or more than one time per year, the situation may start to warrant control to protect the life of the tree. Maintaining tree vigor through regular watering fertilization, and avoiding root compaction will minimize ill effects from the fall webworm and many other tree pests.

Control of fall webworms may be accomplished by destroying leaves containing egg masses, pruning webs off branches and burning and disposing of them, or even giving webs a strong blast from a water hose (McCullough and Siegert 1999). Insecticides can also be used, but should be reserved for cases of extreme infestation or where webs are too high in a tree for easy removal. It is best to apply insecticides when webworms are small, and the chemical needs to reach the inside of the web for maximum effectiveness (Ree and Robinson 1999). Webworms can normally be controlled with just one or two insecticide applications. If the first application is not entirely successful, the second round of insecticides should be applied a week later (Klass 2012). Numerous insecticides are effective against fall webworm, but the bacterial insecticide Bt (*Bacillus thuringiensis*) is recommended as it doesn't affect non-foliage feeding species of insects. Use of insecticides other than Bt can harm beneficial species of insects, some of which even help regulate fall webworm populations. High populations of webworms can serve as a major food source for enemies, which include at least 50 species of parasitic insects, 30 or more species of predatory insects, and other non-insect predators such as small mammals and birds (McCullough and Siegert 1999).

References

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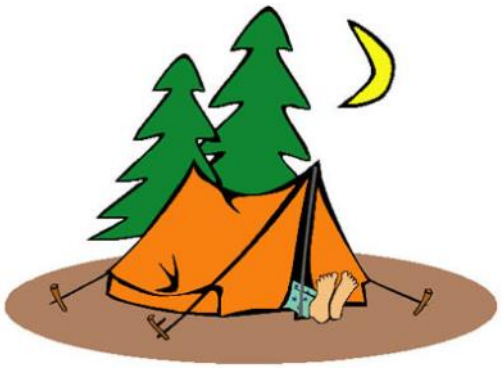

Figure 3: Leaves damaged by fall webworms, take notice of the remaining veins. Photograph by: James Castner, University of Florida, http://entnemdept.ufl.edu/creatures/trees/moths/fall_webworm.htm.

Figure 4: Fall webworm after pupation (tiger moth) and fall webworm pupae. Photograph by Gerald J. Lenhard, Louisiana State University, www.forestryimages.org.

Figure 5: Fall webworm egg mass on underside of leaf. Photograph by: Pennsylvania Department of Conservation and Natural Resources - Forestry Archive, www.forestryimages.org.

FALL WEBWORM

Safety First . . .

Be On Guard Against Swimming-Related Illnesses

From the Mississippi State Department of Health and CDC.

Swimming and other water-related activities are excellent ways to get the physical activity and health benefits needed for a healthy life. Americans swim hundreds of millions of times in pools, oceans, lakes, rivers, and hot tubs/spas each year and most people have a safe and healthy time enjoying the water. Illnesses associated with swimming are on the rise. Summer is a time to enjoy the water, but also to take steps to remain healthy while you do.

Contrary to popular belief, chlorine does not kill all germs immediately. Some germs are very tolerant of chlorine and can cause serious illness. It can take anywhere from minutes to days for chlorine to kill them. Swallowing just a little water that contains these germs can make you sick.

What's in the Water

Germs in pools and other recreational water can cause digestive system illnesses and infections of the skin, ears and lungs. Wound infections can be especially dangerous.

Cryptosporidiosis germs, which can stay alive for days even in well-maintained pools, have become the leading cause of swimming pool-related outbreaks of diarrheal illness. From 2004 to 2008, reported Crypto cases more than doubled. Cryptosporidiosis and other infections can be especially severe for children, pregnant women, and people with weakened immune systems – for example, people who have received an organ transplant, or who are taking certain medications, or who are living with AIDS. Crypto can cause a life-threatening infection to people in these groups, and precautions are especially important.

The risk isn't just in pools. Hot tubs, jacuzzis and fountains can harbor these germs as well, and beaches, lakes and streams exposed to sewage runoff can be sources of illness to swimmers and boaters, even from a brief exposure to water.

What You Can Do

Swimmers themselves can make an important difference in their health risk.

Swimmers and parents can take an active role to protect & prevent the spread of germs by remembering six simple steps.

- Don't swim when you have diarrhea. You can spread germs in the water and make other people sick.
- Don't swallow water from a pool, lake or beach. Avoid getting water in your mouth.
- Practice good hygiene. Shower with soap before swimming, and wash your hands after using the toilet or changing diapers. Germs on your body will quickly enter the water otherwise.
- Take your kids on bathroom breaks or check diapers often. Waiting to hear "I have to go" may mean that it's too late.
- Change diapers in a bathroom or a diaper-changing area and **not** at poolside. Germs can spread in and around the pool.
- Wash your child thoroughly (especially the diaper area) with soap and water **before** swimming. Even very small amounts of fecal matter can end up in the pool and infect many people.

Enjoy the water this summer.